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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/601,715

06/23/2003

Wit Cezary Bushko

121839-1/YOD  
GERD:0058

8721

7590

05/16/2006

EXAMINER

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ART UNIT

PAPER NUMBER

2882

DATE MAILED: 05/16/2006

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**MAILED**

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**GROUP 2800**

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/601,715  
Filing Date: June 23, 2003  
Appellant(s): BUSHKO ET AL.

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Patrick Yoder  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 06 February 2006 appealing from the Office action mailed 24 August 2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5,651,044	Klotz, Jr. et al.	7-1997
6,412,978	Watanabe et al.	7-2002
6,476,376	Biegelsen et al.	11-2002

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-5,7,9,10,12-24,26,27,29,30,32 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Klotz, Jr. et al. (US Patent 5,651,044; hereinafter Klotz).**

Re claim 1: Klotz discloses, in figures 1-3c, an imaging system for sensing a presence of objects near the imaging system, the system comprising:

- a source (120) configured for emitting a stream of radiation;
- a detector (125) configured for detecting a portion of radiation and impacting a detecting face of the detector; and
- a collision avoidance array (300) disposed on the detecting face of the detector and configured for sensing objects (column 3, lines 49-51).

Re claim 2: Klotz discloses the collision avoidance array to further include:

- a plurality of plates (300) disposed on the array substantially in a plane to form an array of capacitors (column 4, lines 37-38), each plate configured to sense objects at a corresponding critical distance and configured to generate a corresponding electrical signal (column 3, lines 49-51);
- a plurality of conductors extending substantially in the plane and coupled to a multiplexer (220), each conductor being coupled to a corresponding one of the plurality of plates and configured for conducting the electrical signal to a sensing circuit via the multiplexer (column 5, lines 27-28).

Re claim 3: Klotz discloses the multiplexer being configured to selectively couple the plurality of plates to the sensing circuit (column 5, lines 27-30).

Re claims 4 and 5: Klotz discloses at least one shielding conductor extending substantially in the plan and coupled to ground (400), the shielding conductor configured for providing shielding to at least one of the plurality of conductors (column 6, lines 49-51).

Re claim 7: Klotz discloses a motor controlling a motion of a gantry, wherein the motor is configured to stop the motion of the gantry when the object is detected (column 3, lines 50-55).

Re claim 9: Klotz discloses the analysis module being configured to determine a distance of the object from the collision avoidance array (column 3, lines 55-59).

Re claim 10: Klotz discloses, in figure 1-3c and throughout the disclosure, a collision avoidance system for avoiding collision of a system component with an object, the system comprising:

- a collision avoidance array (300) disposed on a face of the system component, the collision avoidance array comprising a plurality of plates configured to detect a presence of objects and generate a corresponding electrical signal (column 3, lines 49-51);
  - wherein the system component is an x-ray detector (column 3, line 11)
- a multiplexer (220) coupled to the collision avoidance array, the multiplexer configured to selectively activate the plurality of plates (column 5, lines 27-30); and

- a sensing circuit (250) configured to sense the electrical signal and to generate an output signal representative of the presence of the object (column 5, lines 35-38).

Re claim 12: Klotz discloses the system component being an x-ray detector (column 3, lines 49-50).

Re claim 13: Klotz discloses, in figures 1-3c and throughout the disclosure, the collision avoidance array (300) being disposed on the detecting face of the x-ray detector, the detecting face configured for receiving radiation.

Re claim 14: Klotz discloses the collision avoidance array being configured to detect the object within a critical distance from the system component (column 3, lines 55-59).

Re claim 15: Klotz discloses, in figures 1-3c and throughout the disclosure, a detection system for detecting a presence of an object, the detection system comprising:

- a plurality of sensors (300) disposed on a substrate substantially in a plane, each of the plurality of sensors configured for detecting the presence of the object and generating a corresponding electrical signal (column 3, lines 55-59);
- a plurality of conductors extending substantially in the plane and coupled to a corresponding one of the plurality of sensors, each conductor configured to transmit the electrical signal when the object is detected (column 5, lines 27-28).

Re claim 16: Klotz discloses each of the plurality of sensors being configured for detecting an object at corresponding critical distances (column 3, lines 55-59).

Re claim 17: Klotz discloses the critical distance for each one of the plurality of sensors being determined by a corresponding dimension of the sensor (column 5, lines 45-50).

Re claim 18: Klotz discloses the critical distance being constant for each one of the plurality of sensors (column 5, lines 45-47).

Re claim 19: Klotz discloses, in figure 1 and throughout the disclosure, the substrate comprising an insulator (130; column 4, line 48).

Re claim 20: Klotz discloses each of the plurality of sensors comprises a corresponding capacitor sensor (column 4, lines 37-40).

Re claim 21: Klotz discloses at least one of the plurality of conductors being coupled to ground to provide shielding for the plurality of conductors (column 6, lines 49-51).

Re claim 22: Klotz discloses at least one shielding conductor to provide shielding for at least one of the plurality of conductors (column 6, line 50).



Re claims 23 and 29: Klotz discloses, in figures 1-3c and throughout the disclosure, a method for avoiding collision of a system component with an object, the method comprising:

- detecting a presences of the object within a critical distance from a face of the system component via a collision avoidance array disposed on a detecting face of the system component (column 3, line 38-39) and generating a corresponding electrical signal (column 3, lines 49-51);
- generating an output signal representative of the presence of the object (column 5, lines 27-28).

The Examiner notes the system components of claim 29 merely require the operation of the method included in claim 23 and are anticipated for the same reasons.

Re claims 24 and 30: Klotz discloses controlling the system component to prevent collision with the object (column 3, lines 50-55).

Re claims 26 and 32: Klotz discloses the system component being an x-ray detector (column 3, lines 49-50).

Re claims 27 and 33: Klotz discloses in figures 1-3c and throughout the disclosure, the detecting comprises detecting from a detecting face of the detector (125), wherein the detecting face is configured for receiving radiation from an x-ray source.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 6 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klotz as applied to claims 1 and 23 above, and further in view of Watanabe et al. (US Patent 6,412,978; hereinafter Watanabe).**

Klotz shows all the limitations as shown above.

However, Klotz fails to teach or fairly suggest the collision avoidance array disposed on a non-detecting face of the detector.

Watanabe discloses, in figures 2 and 3, a collision avoidance detector (58) disposed on the non-detecting face of the detector.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to place the collision avoidance sensor on the non-detecting face of the detector disclosed by Klotz because it enables the system to further avoid a collision of mechanical parts within the system itself.

**Claims 8,11,25 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klotz as applied to claims 1,10,23 and 29 above, and further in view of Biegelsen et al. (US Patent 6,476,376; hereinafter Biegelsen).**

Klotz shows all the limitations as shown above.

However, Klotz fails to teach or fairly suggest means for determining the size of the object detected by the collision sensor.

Biegelsen discloses a proximity sensor which is further able to determine the size of the object detected (column 1, line 32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the ability to determine the size of the object detected within the system disclosed by Klotz because it would allow for determining the proper amount of movement needed to avoid collision, thereby making the movements more precise.

#### **(10) Response to Argument**

##### **First ground of rejection, regarding claim 1:**

Appellant has argued that Klotz does not disclose that the collision avoidance array is “disposed on the face of the detector.”

The Examiner respectfully disagrees.

Klotz clearly shows in Fig.2 that the collision avoidance array (formed at least in part by sensor plates 300 and focusing shield 400) is disposed on the detector face. Klotz illustrates this feature through the unlabeled structures securing the shield 400 to the detector face, where the detector face is the bottom of assembly 125, facing the subject, as described in col.3, lines 38-40.

Appellants argue that the collision avoidance array is not disposed on the detector face because the array is doughnut shaped and described as being placed “around the collar assembly.” Again, the examiner wishes to point out Fig.2 to show that the array of Klotz is clearly “disposed on the detecting face of the detector.” Further, the claims do not exclude such specifics. The claims only require that the array be “disposed on the detecting face of the detector.” This limitation neither requires nor places limitations on the shape of the array or how much of the detector face the array covers or overlaps. As a result, Appellants’ arguments are not persuasive.

Appellants further argue that the sensor is not disposed on the detecting face of the detector since Fig.2 shows the shield plates being mounted to the detector face rather than the sensor array 300. As stated in the citation from Klotz and repeated by Appellants on p.9-10 of the Brief, it is clear that the shield plates 400 are part of the sensor system, where the shield plates focus the electric field for improved sensing capabilities of the array. Furthermore, there is no evidence for Appellants’ assertion on p.10 of the Brief that the shield plates 400 “avoid the need to place the sensors over the detecting face of the detector.” Besides, the claimed invention does not require such a limitation. The claims only require that the collision avoidance array is “disposed on the detector face of the detector.” Therefore, since the shield plates 400 are part of the collision avoidance array of Klotz, then the collision avoidance array of Klotz is “disposed on the detecting face of the detector” and thus anticipates the claim. As a result, Appellants’ arguments are not persuasive.

**First ground of rejection, regarding claim 15:**

Appellants argue that Klotz fails to disclose a plurality of sensors “disposed on a substrate substantially in a plane.”

The Examiner respectfully disagrees.

It is clear from the figures of Klotz, particularly Figs.3B and 3C, that the array of sensors are disposed on a substrate substantially in a plane (column 5, lines 5-15). Again, the examiner wishes to point out that the shape in which the sensors are arranged is irrelevant insofar as the sensors lie on the same plane, that is, a geometric plane, which is simply a set of points that lie along the same flat space. Contrary to Appellants’ assertion on p.12 of the Brief, the sensors do not have to occupy the entire surface in order to be disposed “substantially in a plane” insofar as the sensors lie in the plane. For the claimed limitation to be met, the sensors can be arranged in any pattern desired, so long as the sensors lie in the plane. Klotz discloses a plurality of sensors disposed on a substrate substantially in a plane and therefore anticipates the claimed limitation.

Appellants argue on p.12 of the Brief that the sensors of Klotz do not lie in a plane, but conform to the round toroidal surface of the collar assembly. Appellants further cite col.4, lines 53-57, of Klotz. As one skilled in the art can clearly ascertain, this disclosure only describes one embodiment, as the first line states, and if one reads further in the same paragraph, at the top of p.5, Klotz discloses a different embodiment where the sensor plates are arranged in a plane perpendicular to the propagation path of the x-ray radiation (col.5, lines 1-4 and Fig.3B). This teaching is echoed in the next paragraph regarding the embodiment illustrated in Fig.3C, where the view of Fig.3C shows a view of the sensors from a “cut along an equatorial plane” of the collar assembly. Therefore, there are clear disclosures from Klotz to place sensors in a collision

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avoidance array that are disposed on a substrate substantially in a plane, and thus, Appellants' arguments are not persuasive.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

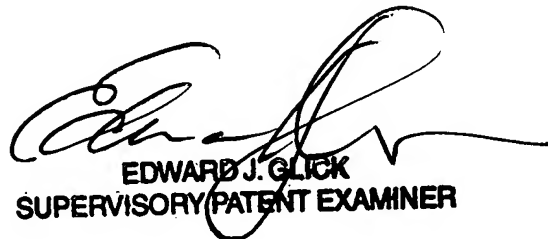
For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Handwritten signature of Thomas R. Artman, dated 4/24/06.

Thomas R. Artman

Conferees:



EDWARD J. GLICK  
SUPERVISORY PATENT EXAMINER

Handwritten signature of Ed Glick.

Darren Schuberg